DOCUMENTED CHROMOSOME NUMBERS 1991: 1. CHROMOSOME NUMBERS IN *HYBANTHUS* (VIOLACEAE)

B.L. TURNER AND LINDA K. ESCOBAR

Department of Botany, University of Texas
Austin TX 78713, U.S.A.

ABSTRACT

Chromosome numbers for 13 species of the pantropical or subtropical genus *Hybanthus* Jacq. (Violaceae) are known, including 9 species from Australia, 4 from North and South America and one from Afroasia. Diploid counts of $2n = 8$, 12, 16, 24, 32 and 48 have been published for the various species. The genus appears to have a base chromosome number of $x = 4$ since polyploidy on such a base will account for all of the numbers reported to date. Dysploids among the various ploidy levels have not been found. In the present paper 5 meiotic counts are presented for four populations of the previously unreported *Hybanthus verticillatus* ($n = 8$ and 16 pairs), and one new meiotic count is given for *H. attenuatus* ($n = 12$ pairs).

The genus *Hybanthus* (Violaceae) is a largely pantropical or subtropical genus with perhaps 60 species. Most of these are concentrated in the New World, with a secondary center in Australia; only a few taxa occur in Africa and Asia. A survey of the literature reveals that chromosome counts for about 13 species of *Hybanthus* have been published (Table 1). Two new species counts are added in the present paper: the previously unreported, largely temperate North American species, *H. verticillatus* (including *H. linearis* (Torr.) Shinners) with meiotic counts of $n = 8$ and 16 pairs, and *H. attenuatus* with meiotic counts of $n = 12$ pairs.

METHODS

Original chromosome counts reported in the present paper were made from meiotic material fixed in a modified Carnoy's solution (4:3:1; chloroform, 95% ethanol, glacial acetic acid, respectively) and stained with acetocarmine using standard methods. Vouchers are on deposit at TEX.

DISCUSSIONS

Hybanthus contains a variety of life forms that range from annual herbs to small trees; many of the annuals are weedy and these presumably could be readily grown from seeds in the greenhouse. Some years ago the junior author undertook a systematic study of the widespread highly variable

SIDA 14(3):501 – 503. 1991.

TABLE 1. Chromosome numbers in *Hybanthus*

Species	Numbers (n pairs)	Area	Ref. or Voucher
H. attenuatus (H.B.K.) Schulze	16	Nicaragua	Davidse (1971)
———	16	S. America	Sundberg & Dillon (1986)
———	12	Mexico	*Turner 15893* (TEX)
H. aurantiacus (Benth.) Muell.	8	Australia	Bennett (1972)
H. bilobus Gardn.	12, 24	Australia	Bennett (1972)
H. calycinus (DC.) Muell.	6, 12	Australia	Bennett (1972)
H. communis (St. Hil.) Taub.	16	S. America	Gadella et al. (1969)
H. cymulosus Gardn.	6	Australia	Bennett (1972)
H. enneaspermus (L.) Muell.	16	Africa	Margenot & Mangenot (1962)
———	8	Australia	Bennett (1972)
———	16	Asia	Sarkar et al. (1980)
———	8	Asia	Peng & Chen (1985)
H. epacroides (Gardn.) Melch.	12	Australia	Bennett (1972)
H. floribundus (Lindl.) Muell.	6, 12, 24	Australia	Bennett (1972)
H. monopetalus (R. & S.) Domin	4	Australia	Bennett (1972)
H. parviflorus (Mut.) Baill.	12	S. America	Heilborn (1926)
———	6	S. America	Di Fulvio (1977)
H. verticillatus (Ort.) Baill.	8	TEXAS: Cameron Co.	*Escobar 610* (TEX)
———	8	TEXAS: Gonzales Co.	*Escobar 595* (TEX)
———	16	TEXAS: Live Oak Co.	*Whalen 262* (TEX)
———	8, 16	TEXAS: Real Co.	*Escobar 600* (TEX)
H. volubilis Bennett	4	Australia	Bennett (1972)

temperate species, *Hybanthus verticillatus* and related taxa (unpubl.). She concluded that two names previously associated with this complex (i.e., *H. linearis* and *H. verticillatus* var. *platyphyllus* (A. Gray) Cory and Parks) were in fact but leaf forms of *H. verticillatus*. As shown in Table 1, the species includes both diploids and tetraploids; the different numbers are unrelated to leaf forms or yet other recognizable morphological features. Indeed, polyploidy is fairly common within a given taxon and all of the species can be said to have a base chromosome number of $x = 4$, since that number is divisible into all of the counts available to date, and none of the taxa is reported to have dysploid counts. Australian species show the largest array of chromosome numbers; these range from diploids with $n = 4$ pairs to dodecaploids with $n = 24$ pairs (Table 1).

The New World species are poorly represented to date, but chromosome numbers of $n = 8$, 12 and 16 pairs have been reported for the several species examined. It is likely that a range of polyploid numbers on a base of $x = 4$ will be recorded for the widespread weedy taxa; thus the only three counts for *H. attenuatus* reveal haploid numbers of $n = 12$ and 16, and the

few very localized counts of *H. verticillatus* reveal haploid numbers of $n = 8$ and 16. The senior author has long attempted to interest some student with an urge to travel, collect and cogitate, to initiate a monographic study of this fascinating group.

REFERENCES

BENNETT, E.M. 1972. A revision of the Australian species of *Hybanthus* Jacquin (Violaceae) Nuytsia 1:218–241.

DAVIDSE, G. 1971. *In* Chromosome number reports 32. Taxon 20:351.

DI FULVIO, T.E. 1971. Recuentos cromosómicos en Angiospermas Argentinas. III. Kurtziana 10:69–72.

GADELLA, TH. W.J., E. KLIPHUIS, J.C. LINDEMAN, and G.A. MENNEGA. 1969. Chromosome numbers and seedling morphology of some angiospermae collected in Brazil. Acta Bot. Neerl. 18:74–83.

HEILBORN, O. 1926. Bidrag till Violaceernas cytologi. Svensk Bot. Tidskr. 20:414–419.

MANGENOT S. and G. MANGENOT. 1962. Enquete sur les nombres Chromosomiques dans une collection d'especes Tropicales. Rev. Cyt. Biol. Veg. 25:411–447.

PENG, C.-I. and Y.-F CHEN. 1985. *Hybanthus* Jacq. (Violaceae), a new generic record for the flora of Taiwan. Bot. Bull. Acad. Sin. 26:213–220.

SARKAR, A.K., M. CHAKRAVERTY, S.K. DAS, C.R. PAL, and D. HAZARA. 1980. *In* Chromosome number reports 67. Taxon 29:358–360.

SUNDBERG, S. and M. DILLON. 1986. *In* Chromosome number reports 91. Taxon 35:409–410.